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A. SHEBERASHENKO

KNURLING TOOL

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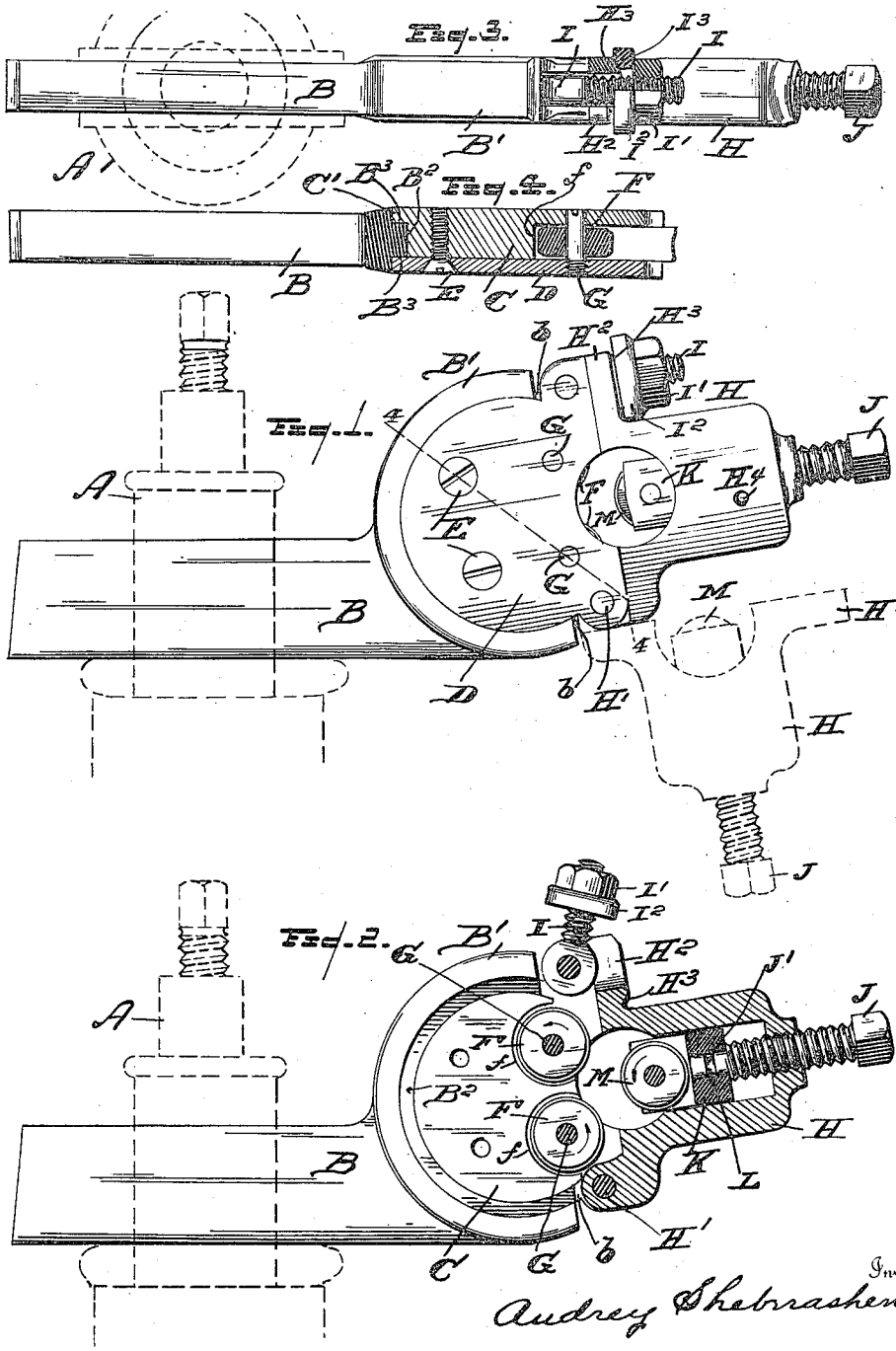

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KNURLING TOOL.

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To all whom it may concern:

Be it known that I, AUDRIY SHEBERASHENKO, citizen of Russia, residing at Detroit, county of Wayne, State of Michigan, have invented a certain new and useful Improvement in Knurling Tools, and declare the following to be a full, clear, and exact description of the same, such as will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to a knurling tool shown in the accompanying drawing and more particularly described in the following specification and claims.

One object of this invention is to provide a tool fitted with a plurality of knurling rolls, the tool having an element hinged to the body portion of the tool adapted to encircle the member to be knurled, the hinged element being fitted with an adjustable knurling roll co-operating with the stationary knurling rolls carried by the body portion of the tool.

A further object of the invention is to provide a supporting member including a shank for adjustably mounting it in the tool holder of a lathe having an arcuate-shaped end to reccive the body portion of the tool,—the construction being such that the body portion of the tool is permitted a limited oscillatory movement in the arcuate end of the holder that it may adapt itself to any slight irregularity in the alignment of the element to be knurled.

A further object of the invention is to provide the tool with clamping means for attaching the free end of the hinged member securely to the body of the tool, said clamping means being also adapted to secure the parts against spreading due to any lateral movement of the element to be knurled.

A further object of the invention is to so construct the arcuate end of the supporting member embracing the body of the tool that it may secure the body of the tool against accidental dislodgement therefrom while permitting a limited oscillatory movement of the body of the tool in said supporting member.

With the foregoing and other objects in view which will appear as the description proceeds the invention further resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes may be made in the precise embodiment of the invention herein disclosed without departing from the spirit of the same.

In the drawings accompanying this specification:

Figure 1 is a side elevation of the tool shown in "closed" position and in dotted lines the hinged clamping member in its "open" position, also indicating in dotted lines a fragment of the lathe tool holder in which it is mounted.

Figure 2 is a side elevation partly in section with one of the flange plates of the locking member removed to disclose the stationary knurling rolls,—the view also showing the adjustable knurling roll carried by the hinged member.

Figure 3 is a plan view of the device partly in section showing the clamping member for securing the hinged member in its "closed" position.

Figure 4 is a sectional view through the body of the tool and its supporting member taken on or about line 4—4 of Figure 1.

Referring now to the letters of reference placed upon the drawings;

A, denotes a lathe tool holder of usual construction. B, indicates the shank of the tool carried by the tool holder having an arcuate-shaped end B′ and an inwardly directed flange B^2, spaced from each side of the tool to form recesses B^3, B^3. C, designates the body of the tool, provision being made for a slight oscillatory movement in the arcuate end of the supporting shank B:—see space indicated at *b* between arcuate end of supporting member and the lug on the body portion of the tool. C′, is a projecting flange integral with the body of the tool extending into the recess B^3, and D is a flange plate secured by screws E to the body of the tool extending into the recess B^3 on the opposite side of the tool. F, F, are knurling rolls housed in the recesses *f*, *f*, formed in the body of the tool, journalled upon the pins G, G, carried by the body portion, and flange plate D. H, is a clamping member hinged at H′ between a lug formed integral with the body of the tool and a like lug carried by the flange plate D. The hinged clamping member is provided with a forked portion H^2 having an inclined face H^3. Pivoted to a lug carried by the body portion and the flange plate D is a swinging bolt I,

fitted with a nut I′ and a washer I^2, having an inclined face I^3 adapted to act upon the inclined face H^3 of the clamping member, the purpose being to insure the forked portion H^2 of the clamping member against spreading due to any lateral thrust of the element being knurled. J, is an adjustable bolt supported in the wall of the clamping member on which is mounted a yoke K secured thereto by a transverse pin L projecting through the wall of the yoke and into a peripheral groove J′ in the bolt. M, denotes a knurling roll journalled in the yoke. H^4 is an aperture in the wall of the clamping member H through which the pin L is inserted upon assembling the parts.

Having now indicated the several parts by reference letters the construction and operation of the device will be readily understood.

The element to be knurled is mounted in the lathe in the usual way and if of relatively large diameter the tool is adjusted so that only the two stationary rolls impinge upon the element to be knurled. If however the part to be knurled is of relatively small diameter and therefore apt to spring when acted upon by the knurling rolls the clamping member is adjusted so as to clamp the element to be knurled between the stationary and adjustable rolls, the latter roll being adjusted to adapt it to the diameter of the element to be knurled. When the clamping member is in position the swinging bolt I is turned so as to enter the forked end of the clamping member,—the nut carried by the bolt is then adjusted to force the inclined washer I^2 into impinging relation with the inclined face H^3 of the clamping member;—the washer serving to secure the forked end against spreading due to any lateral thrust of the element being knurled. The element to be knurled is then rotated thus actuating the knurling rolls as indicated by the arrows,—the tool being shifted longitudinally along the element knurled in the usual manner. It will also be seen that provision has been made for a limited oscillatory movement of the body of the tool in the arcuate end of the supporting member to provide for any slight variation in the rotation of the element being knurled (see *b* Figure 1) while the arc-shaped flange of the latter embraces the hub shaped portion of the body of the tool to such an extent that the body of the tool is insured against accidental dislodgement therefrom.

Having thus described my invention what I claim is:

1. In a tool of the character described, a supporting shank having an arcuate-shaped end, a member fitted in the arcuate-shaped end of the shank adapted for a limited oscillatory movement therein, knurling rolls journaled in said oscillatory member, a clamping member hinged to said oscillatory member and a knurling roll adjustably mounted in said clamping member adapted to co-operate with the stationary knurling rolls of the oscillatory member.

2. In a tool of the character described, a supporting shank having an arcuate-shaped end, a member fitted to said arcuate-shaped end of the shank provided with flanges adapted to secure it against lateral displacement when assembled with the shank, knurling rolls journalled in said oscillatory member, a clamping member hinged to the oscillatory member, a knurling roll journaled in a movable block housed within the clamping member and a bolt extending through the wall of said clamping member and connected with the movable block, whereby said last named knurling roll may be adjusted in relation to the knurling rolls carried by the oscillatory member.

3. In a tool of the character described, an oscillatory member having side flange walls, a supporting shank having an arcuate-shaped end adapted to encircle the major portion of the perimeter of said oscillatory member between the side flange walls of the latter, whereby the oscillatory member is held against accidental withdrawal and lateral dislodgement, knurling rolls journaled in the oscillatory member, a clamping member hinged to the oscillatory member, means for securing the free end of the clamping member when closed upon the oscillatory member, a movable block carried by the clamping member, a knurling roll journaled in said block and a bolt extending through the wall of the clamping member and connected with the movable block for adjusting the knurling roll.

4. In a tool of the character described, a shank having an arcuate-shaped end, a member fitted to said arcuate-shaped end adapted for a limited oscillatory movement in the shank, a clamping member hinged to the oscillatory member, a swinging bolt pivoted to the oscillatory member, for securing the free end of the clamping member to the oscillatory member, a washer having a cone-shaped recess therein fitted to the bolt adapted to engage a cone-shaped portion on the free end of the clamping member and a nut mounted upon the bolt to force the washer against the cone-shaped portion of the free end of the clamping member, thereby holding the clamping member in closed position.

5. In a tool of the character described, a supporting shank having an arcuate head, a member fitted to said arcuate head of the shank, knurling rolls in the said member, a clamping element hinged to the aforesaid member and an adjustable knurling roll slidably mounted therein, the said arcuate-shaped member and clamping element hav-

ing complemental recesses therein forming an opening to receive the article to be knurled when in clamping position, and means for clamping the said element.

6. In a tool of the character described, a supporting shank having an arcuate head, an oscillatory member fitted to the head, knurling rolls journalled therein, a clamping element hingedly secured to the said member and provided with a recess and chamber communicating with each other, a yoke slidably mounted within the chamber and a knurling roll thereon, the said roll projecting from the chamber into the recess to impinge upon the article to be knurled, and means for adjusting the yoke within the chamber.

7. In a tool of the character described, a member comprising two elements hinged together, a plurality of knurling rolls respectively mounted therein, a swinging bolt pivoted to one element of said member adapted to enter a slot in the free end of the other element of said member, a washer provided with an inner cone-shaped face sleeved upon the bolt, said washer being adapted to bear upon a cone-shaped wall adjacent the slot in the free end of said last named element, a nut fitted to said bolt adapted to force the washer into impinging relation with the free end of said member and a shank adapted to receive and support said first named member in a tool holder.

8. In a tool holder of the character described, a member comprising two elements hinged together, a plurality of knurling rolls journaled upon pins supported in the wall of one of said elements, a movable block housed in the other element, a knurling roll journaled in said movable block, a bolt screwed into the wall of the last named element for adjusting said block, means for clamping said elements together to embrace the element to be knurled, and a shank adapted to receive and support said divided member in a tool holder.

9. In a tool of the character described, a supporting shank, an oscillatable head mounted therein and carrying knurling rolls, a clamping element supporting an adjustable knurling roll therein hinged to the oscillatable head and oscillating therewith, the said clamping element and head encircling the article to be knurled when in closed position.

In testimony whereof, I sign this specification in the presence of two witnesses.

AUDRIY SHEBERASHENKO.

Witnesses:
S. E. THOMAS,
JOHN CONSIDINE.